DRAFT DOCUMENT
FOR DISCUSSION AND COMMENT ONLY
(Revised October 18, 2002)

The State of California
K-12 Education Technology Master Plan
Prepared by the
Commission on Technology in Learning

Public comments will be accepted through November 19, 2002.
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40 **I.   Vision**

41

42   *Closing the gaps in access to technologies to enhance and enable teaching, learning*
43   *and leadership, will help all students achieve mastery of the State Academic Content*
44   *Standards throughout California, providing students a future of choices and a choice*
45   *of futures.*

46

47   California's global economic future increasingly depends on California's educational
48   system. California currently ranks as the world's fifth largest economy, yet despite
49   significant interest and improvement in recent years, California's K-12 educational
50   system still ranks below most other states on key educational benchmarks including,
51   spending and student achievement. The Commission on Technology in Learning
52   (CTL) recognizes the need for California's educational system to improve, and it is
53   the hope of the CTL that this report will serve to initiate a re-evaluation of the process
54   by which technology is systemically integrated into all levels of education.

55

56   California has the opportunity to regain our position as a national educational leader
57   by investing in our schools and working with educators[1] to integrate the technologies
58   that will enhance and enable teaching, learning, pedagogy, and school management.
59   All education stakeholders should capitalize on the uses of technology to close the
60   gaps in access to quality curriculum, assessment, and teaching, professional
61   development and administration, infrastructure and technical support to raise the
62   achievement level of all students statewide.

63

64   Education continues to be an issue of concern and a high investment priority for
65   Californians. Education technology policy initiatives and funding at the state level
66   should be aligned to recognize and reward student achievement, educational
67   leadership, and school improvement, and should be designed and allocated to provide
68   consistency, stability, and transparency to districts, schools and the public. The
69   policy environment at the state level must facilitate the districts', schools', and
70   educators' ability to use technology to ensure that all students master the State
71   Academic Content Standards at every grade level. The Commission recognizes,
72   however, that these educational goals cannot be achieved through state action and
73   support alone and thus calls on those from higher education, business and industry,
74   nonprofit organizations, and community and parent groups to assist educators and
75   policymakers to improve California schools and further their **technology**
76   **integration**.[2]

77

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[1]   Refers to all teachers, administrators, and school staff. This is in keeping with the organizational learning
literature that discusses the importance of everyone involved in a system (Senge, 2000).
[2] Throughout the document, key terms will be highlighted and defined in Appendix I.

78	The Commission on Technology in Learning believes that education technology,
79	equitably distributed and appropriately applied, enhances and enables student
80	learning, innovative teaching, professional development, school management, **data-**
81	**driven decision-making** and collaboration across the education spectrum.
82	
83	
84	**II.** **Nature and Function of the Plan**
85	
86	The purpose of the Education Technology Master Plan is to provide a vision for the
87	state on how to effectively use and support education technology to improve student
88	achievement, close the gaps in access to education technology, and move California
89	schools to at least parity with the level of technology integration in other states.
90	
91	The Education Technology Master Plan sets goals and benchmarks for state and local
92	policymakers and educators to attain higher levels of education technology
93	integration by the year 2007. Achieving higher levels of education technology
94	integration will support the primary goal of all stakeholders, which is to improve
95	teaching, learning, and administration statewide.
96	
97	
98	**III.** **Progress Towards the 1996 Plan**
99	
100	There has been progress made towards the goals of the 1996 California Education
101	Technology Master Plan (*Connect, Compute, and Compete*). The 1996 Plan was
102	intended to assess the current state of technological readiness in California's
103	classrooms and libraries and to serve as a blueprint for action. It recommended
104	building the technology capacity in California's schools, so that by the year 2000,
105	California would have met the following objectives:
106	
107	• A student-to-computer ratio of four to one;
108	• Telecommunications access for students in every classroom and library;
109	• Technology as an integral resource for all students and teachers; and
110	• Reading and math scores above the 50th percentile nationally.
111	
112	Despite significant effort and commitment at both the State and regional levels, the
113	lack of overall education technology funding, and the lack of priority education
114	technology has received relative to other educational needs among state policymakers
115	have been the primary impediments to reaching the 1996 objectives. The current
116	economic downturn continues to adversely affect the state's progress because of the
117	high-cost nature of education technology integration into curriculum and assessment,
118	including the need for professional development and hardware acquisition. In
119	addition, many schools in California have complex infrastructure needs, including
120	those related to telecommunications and electrical requirements, which have also
121	served as impediments to the successful implementation of the education technology
122	goals set forth in 1996.
123	

124
125   While the education technology goals set in 1996 have not yet been achieved, the
126   gains have been impressive, especially with respect to the ratio of students to
127   computers and Internet access in classrooms. The California Technology Assistance
128   Project (CTAP) *Summary of Year 2002 School Technology Survey Findings:*
129   *California Statewide Report*, found that 96% of schools were connected to the
130   Internet in 2002, and that telecommunication access in the classroom has broadened
131   across the state with the average school providing connections to the Internet in 84%
132   of its classrooms (up from 58% two years earlier). Additionally, the student-to-
133   computer ratio (a common measurement of student access to computers) has made
134   steady improvement, declining to a ratio of 5.3 to one in 2002. Another measurement
135   of student access to technology is the ratio of students-to-multimedia computers
136   (which include computers with internet access capability). During 2002, this ratio
137   was 9.10 to one; however, because the definition for multimedia computers changed
138   in 2002 for purposes of the survey, reliable trend data is not available.
139

Connectivity & Access	**2000**	**2001**	**2002**
Schools connected to the Internet	**80%**	**90%**	**96%**
Classrooms connected to the Internet	**58%**	**77%**	**84%**
Student/Computer Ratio	**6.97**	**6.37**	**5.30**

140
141   With recent efforts at the state level to fund the implementation of comprehensive
142   technology programs, such as the Digital High School Program, California schools
143   have made significant gains in connectivity and access to technology. High schools
144   reportedly provide students with access to more technology than at the other grade
145   levels, with 99% of high schools in the state connected to the Internet, 94% of their
146   classrooms connected, and a student to computer ratio of 4.1 to one.
147
148   Conversely, the survey findings provide a clearer picture of how well technology in
149   our schools is supported at the district and site levels. Survey results indicate that
150   although schools are acquiring more computers and high-speed connections to the
151   Internet, there is a clear lack of personnel to provide technical support and training to
152   help teachers integrate educational technologies with instruction. In 2002, 62% of
153   schools had no certificated personnel to provide technical support and 45% of schools
154   had no classified personnel to provide technical support. Additionally, 33% of
155   schools had to wait more than a week (but less than a month) for hardware repairs,
156   making it more difficult to utilize technology on a regular basis for instruction.
157   Support and training for the integration of computer technologies into daily lesson
158   planning has emerged as a critical area in recent years. In 2002, 50% of schools had
159   no certificated staff at the school site to provide the necessary curriculum support.
160

161 All students should have access to state of the art technology and rigorous and
162 effective **digital content**. Although the "digital divide" gap is closing, California
163 schools still struggle with digital inequities. Despite the state's efforts, students living
164 in poverty continue to have less access to better technologies. Survey results indicate
165 that students attending the "richest" schools in California (those with the lowest
166 poverty levels) have a student-to-computer ratio of 4.74, as compared to a ratio of
167 6.13 for the poorest schools (those with the highest levels of poverty). Also, schools
168 with high poverty levels reported fewer classrooms connected to the Internet (80%) as
169 compared to schools with low poverty levels (93%).
170

Connectivity & Access by Measures of Poverty		
	Free and Reduced Price Lunch Eligible Enrollment	
	0-20%	**81-100%**
Schools connected to the Internet		
2000	**81%**	**74%**
2001	**91%**	**89%**
2002	**97%**	**96%**
Classrooms connected to the Internet		
2000	**70%**	**39%**
2001	**87%**	**67%**
2002	**93%**	**80%**
Student/Computer Ratio		
2000	**6.37**	**9.14**
2001	**5.89**	**7.29**
2002	**4.74**	**6.13**

171
172 Federal education technology programs, such as the E-rate program and the
173 Technology Literacy Challenge Grant Program, have made efforts to target high
174 poverty schools and the data shows marked improvements in access and connectivity
175 in even the poorest schools as compared to two years ago. In the last two years, the
176 number of high poverty schools connected to the Internet increased from 74% to
177 96%, which almost equals the same percentage as for the "richest" schools (97% in
178 2002). Also, the number of classrooms connected to the Internet for the poorest
179 schools, made significant gains, increasing from 39% to 80%.
180
181 As California plans for the future, policymakers must recognize the technology
182 investment that the state has made in our schools and understand that the
183 recommendations in this report aim to maximize that investment by putting the power
184 of technology into the hands of all teachers, students, and administrators.
185
186

186
IV. Looking Forward

189   The Commission on Technology in Learning is committed to the integration of
190   technology in education to enable and enhance districts', schools', and educators'
191   ability to improve student achievement.

193   Recognizing that technology will change over the next five years, the CTL
194   encourages the state to support local flexibility in the integration of technology. It is
195   important to allow educators flexibility to ensure that the technology is best used to
196   meet the needs of students. The CTL believes that the state must consistently support
197   and align education policy to promote the integration of technology throughout
198   California.

200   •   Present 6 case studies of effective uses of education technology integration
201   and its positive effects on teaching, learning, and school management
202   (elementary, middle school, high school examples of its impact on the
203   curriculum and assessment + a professional development example + an
204   administrative example + a partnership example).

206   In recent years, California passed legislation that has furthered in the integration of
207   technology in education. Programs such as, Digital High Schools, have benefited
208   students throughout California and should continue to be supported by policymakers.
209   Current statewide technology resources such a the Digital California Project (DCP),
210   California Student Information System (CSIS), California Learning Resource
211   Network (CLRN), California Technology Assistance Project (CTAP), Technology
212   Information Center for Administrative Leadership (TICAL) and Technical Support
213   for Education Technology in Schools (TechSETS)[3], have also played a significant
214   role in California's technology integration and need to continue to be supported and
215   expanded to better serve the needs of the districts, schools, and educators throughout
216   the state.

218   The Commission on Technology in Learning recommends that the state continue to
219   develop the possibilities of the Digital California Project to ensure the availability of
220   the network to all schools and to realize effective uses for the newly completed
221   network (multi-dimensional aspect). The Commission also recommends that the state
222   focuses on the coordination and efficient use of resources and explores the
223   possibilities for furthering data-driven decision-making processes at all levels.
224   Consistency and alignment of policy and funding at the state and local levels are
225   critical for California to improve education technology integration to assist all
226   students in mastering California's State Academic Content Standards.

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[3] These statewide technology resources are defined in Appendix V.

| 229 | **V.** | **Components and Goals** |
| 230 | | |

231 ***Curriculum, Instruction, and Assessment: Ubiquitous Technology and Mastery of***
232 ***Academic Standards***
233

234 *Closing the gaps in access to rigorous and effective digital content aligned to the*
235 *State Academic Content Standards and fully integrated into curriculum and*
236 *assessment will help ensure that all students are prepared to meet the present and*
237 *future needs of California.*
238

239 • **Equity and Access**
240

241 Goal: All students and educators will have **ubiquitous access** and the ability
242 to utilize rigorous and effective digital content.
243

244 Rationale: Technology may be used effectively to facilitate the distribution
245 and broaden the delivery of rigorous and effective digital content across the
246 state. The digital divide that stretches across many communities is not only
247 related to hardware and connectivity, but also to rigorous and effective digital
248 content. Traditionally, students in the least advantaged schools also have had
249 the least access to digital content. Closing this knowledge gap requires the
250 state to ensure that rigorous and effective digital content is accessible and
251 utilized by all students and teachers to assist students in meeting and
252 exceeding the State Academic Content Standards. Importantly, technology
253 allows all students, including English language learners and those with special
254 needs, the opportunity to participate fully in education. Ensuring equity and
255 access to rigorous and effective digital content allows students and teachers to
256 be both users and producers of academic content and innovative curriculum
257 and assessment, furthering efforts to improve student achievement.
258

259 • **Standards**
260

261 Goal: All educators will fully integrate into their practice appropriate
262 education technologies and rigorous and effective digital content to promote
263 mastery of the State Academic Content Standards by all students.
264

265 Rationale: Education technologies and digital content, aligned to State
266 Academic Content Standards, enable students and teachers to address
267 individual learning needs (e.g., age, disabilities, ability level, special needs)
268 using multiple approaches to rigorous and effective content. Learning
269 flexibility increases the opportunities for all students to gain mastery of the
270 Sate Academic Content Standards. Education technologies promote this
271 flexibility, along with collaboration, innovation, applied and contextual
272 learning, and have been shown to increase student achievement. Moreover,
273 education technologies make possible data collection, analysis and real-time
274 assessment of learning, all of which provide educators with necessary

275	feedback loops that assist in identifying and targeting the individual learning
276	needs of students.
277	
278	• **Information & Technology Literacy**
279	
280	Goal: All students will develop skills[4] that enable them to meet and exceed
281	the demands for an information and technologically literate workforce.
282	
283	Rationale: The knowledge economy age requires that workers be
284	information-literate, "a person must be able to recognize when information is
285	needed and have the ability to locate, evaluate, and use effectively the needed
286	information."[5] Workers must also have knowledge of and proficiency with
287	numerous technologies (e.g., hardware, programs, applications) and the vast
288	resources available through the Internet and the World Wide Web. Students
289	who are the workers of tomorrow must learn to develop the skills that will
290	enable them to use the technological tools available and to understand the
291	information gleaned and analyzed by the technology. Ensuring students
292	develop **information and technology literacy** will help to ensure the state's
293	economic competitiveness in the 21st Century.
294	
295	
296	*Professional Development: Systemic Reforms and Continuous Improvement*
297	
298	*Closing the gaps in access to systemic professional development that encourages*
299	*leadership, collaboration, and continuous improvement will ensure ubiquitous*
300	*technology integration in education that supports the present and future needs of*
301	*California.*
302	
303	
304	• **Equity and Access**
305	
306	Goal: All educators will have access to rigorous and effective systemic
307	professional development that promotes the integration of technology in
308	education.
309	
310	Rationale: Technologies may be used effectively to facilitate the distribution
311	and broaden the delivery of rigorous and effective professional development
312	across the state. The opportunity to develop professionally must be equally
313	accessible to all educators. Improving upon and learning new methods for
314	technology integration will bring about systemic reform in curriculum,
315	assessment, pedagogy, and school management.
316	

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[4] International Society for Technology in Education includes a set of skills as a part of their NETS and the full list is included in Appendix IV: ISTE's NETS.
[5] *American Library Association Presidential Committee on Information Literacy.* Chicago: American Library Association, 1989.

317
318 • **Systemic Professional Development**
319
320   Goal: All educators will receive the training, resources and support necessary
321   to appropriately and effectively integrate technology into curriculum,
322   assessment, pedagogy, and school management.
323
324   Rationale: Capacity building in the profession and reform in education
325   requires that all educators participate in **systemic professional development**
326   programs that support the integration of technology. Educators' varying
327   technology proficiencies require a professional development model that
328   evolves as technical skills increase. This professional development model
329   should be systemic, comprehensive, and include fully supported training that
330   is scaffolded according to individual needs, providing opportunities for one-
331   on-one interaction, workplace and classroom support, and on-line instruction.
332   This model should also include daily or weekly training to meet technical and
333   pedagogical needs, as well as annual or semi-annual intensive training to learn
334   new applications and pedagogical strategies. Most important, educators need
335   time to participate in training programs, develop their newly learned skills,
336   and apply them into their practice. Systemic professional development for
337   technology integration must be fully supported at the state, district, and school
338   level.
339
340
341 • **Leadership and Collaboration**
342
343   Goal: All educators will engage in **professional activities** that develop
344   rigorous and effective digital content, integrate technology in education, and
345   promote leadership and collaboration across the education profession.
346
347   Rationale: Educators need to be actively working together to create, share,
348   and scale best practices, rigorous and effective digital content and effective
349   uses of technology integration. Technology provides educators the
350   opportunity to work collaboratively, independent of location, to develop and
351   disseminate exemplars of technology integration into curriculum, assessment,
352   pedagogy, and school management. Educators need to develop leadership
353   skills that encourage the systemic production, evaluation, and application of
354   digital content, and support the use of technology in schools. Educators also
355   need to serve as models and mentors, to sustain a positive professional culture
356   of continuous improvement and a system of opportunity for professional
357   development that makes use of all available resources at the local, state, and
358   national level.
359
360

360	
361	• **Continuous Improvement**
362	
363	Goal: All educators will participate in systemic professional development
364	activities that encourage reflective practices and use technology to
365	continuously improve curriculum, assessment, pedagogy, and school
366	management.
367	
368	Rationale: Systemic professional develop must encourage reflective practice,
369	data-driven decision-making processes, and continuous improvement in
370	education. Educators need to be actively working to continually improve their
371	use of technology in order to improve teaching, learning and school
372	management. Reflective practice requires that educators be knowledgeable of
373	current research and application, develop mechanisms that provide feedback,
374	and work to continually improve their skills. Educators must also use data to
375	make better-informed decisions about the appropriate and effective uses of
376	technology.
377	
378	
379	*Infrastructure: Ubiquity, Sustainability, and Dynamic Design*
380	
381	*Closing the gaps in anytime, anywhere access for all students and educators;*
382	*promoting sustainability and comprehensive planning; and leveraging resources and*
383	*education data will ensure a dynamic technological infrastructure that supports the*
384	*present and future needs of California.*
385	
386	
387	• **Equity and Access**
388	
389	Goal: All students and educators must be able to access and utilize all
390	necessary and appropriate technology resources anytime, anywhere.[6]
391	
392	Rationale: Large inequities exist and persist in anytime, anywhere access to
393	operable, reliable, and assistive technology for all students and educators
394	across all communities in California. There are significant technological
395	infrastructure challenges statewide, some impacting rural and urban districts,
396	others affecting schools and their communities. Moreover, ubiquitous access
397	to and reliable operability of assistive technology ensure that the learning
398	needs of all students are met in an appropriate and timely manner.
399	
400	• **Sustainability and Comprehensive Planning**
401	
402	Goal: All districts and schools must engage in comprehensive technology
403	planning, incorporating **total cost of ownership** into annual budget processes,

---

[6] For a further definition of anytime, anywhere access, refer to the Target Tech Level provided in the CEO Forum StaR Charts in Appendix II.

404	and design infrastructure for sustainability and optimal utilization of present
405	and future technology.
406	
407	Rationale: Designing infrastructure for sustainability and optimal utilization
408	means that technology cannot be treated as a stand-alone or a one-time cost in
409	state, district, and school budgets. Sustainability requires that the technology
410	infrastructure be scalable, reliable, upgradeable, and interoperable across the
411	entire education system in California. As with other infrastructure costs,
412	technology has several components, including technical support, maintenance,
413	replacement, recycling, and disposal. Building infrastructure and acquiring
414	technology requires state and local policymakers, educators, and education
415	partners (businesses and nonprofit organizations) to employ a total cost of
416	ownership model in their technology planning and budgeting. The State
417	should encourage districts and schools to seek out new and leverage existing
418	resources to design for sustainability and optimal utilization of technology.
419	
420	• **Leveraging Existing Resources**
421	
422	Goal: All policymakers and educators must collaborate to promote flexibility
423	with existing state technology tools, funding mechanisms, and additional
424	resources to coordinate and develop a sustainable, ubiquitous, and dynamic
425	technology infrastructure.
426	
427	Rationale: At all levels policymakers and educators need greater flexibility to
428	leverage and coordinate existing resources to ensure a sustainable, ubiquitous,
429	and dynamic infrastructure (e.g., how funds and building spaces are used and
430	allocated for technology integration). With increased flexibility, there is a
431	need to design policy that improves accountability in the area of technology
432	integration emphasizing outcomes and not inputs (e.g., student achievement
433	and administrative efficiency, and not categorical funding). Moreover, the
434	state has invested significantly in the use of technology by creating resources
435	such as a statewide network, a technical assistance support structure, a
436	curriculum tool, professional development and resources for administrators
437	and technology staff, and a student data and record-keeping system. These
438	technology tools provide tremendous benefit to educators and can be further
439	developed and better coordinated to realize their potential. The State must
440	continue its support of these programs and work to structure policy incentives
441	to encourage local policymakers and educators to collaborate and leverage
442	these and other resources.
443	
444	• **Collecting, Storing, Using, and Securing Data**
445	
446	Goal: All policymakers, educators, students, and parents will have anytime,
447	anywhere access to appropriate and necessary data that is securely collected
448	and stored to help them make better-informed decisions related to the
449	integration of technology and effective educational practices.

450	
451	Rationale: Technology may be used effectively to facilitate the collection and
452	distribution of educational data and broaden the understanding of
453	policymakers, educators, students, and parents to help them make better-
454	informed decisions. There is a need for better student data at all levels, so that
455	policymakers, educators, students, and parents will be able to assess and
456	determine the educational effectiveness of their actions and decisions. While
457	there are security and privacy issues related to record keeping, there are also
458	sufficient technological safeguards that can secure student data. The State
459	must support the secure coordination, collection, analysis, planning, and
460	publishing of district, school, and student data in order to accurately assess
461	educational improvement.

VI. Recommendations for Implementation

Vision: Closing the gaps in access to technologies to enhance and enable teaching, learning and leadership, will help all students achieve mastery of the State Academic Content Standards throughout California, providing students a future of choices and a choice of futures.

Recommended Action:
1. The State should identify and determine multiple measures for an **Infrastructure Performance Index** (IPI) and develop appropriate methods for the collection, analysis, and publishing of the IPI in the Annual School Accountability Report.

Curriculum, Instruction, and Assessment: Ubiquitous Technology and Mastery of State Academic Content Standards

- **Equity and Access**

Goal: All students and educators will have ubiquitous access and the ability to utilize rigorous and effective digital content.

Recommended Actions:
2. The State should use the IPI to develop incentives and allocate resources to districts and schools to help them achieve ubiquitous access to rigorous and effective digital content to meet the diverse learning needs of all students.
3. The State should continue to support, expand, and coordinate technology resources such as, the DCP and CLRN, to gather and promote access to rigorous and effective digital content.

Target Tech Indicators:
- 100% of students and educators have ubiquitous access to rigorous and effective digital content to meet the diverse learning needs of all students.

496 • Digital content is seamlessly integrated and used by 100% of students and
497 educators on a daily basis in all classes and subjects.
498 • 100% of students have anytime, anywhere access to online course units to
499 supplement and expand course offerings.
500
501 • **Standards**
502 Goal: All educators will fully integrate into their practice appropriate
503 education technologies and rigorous and effective digital content to promote
504 mastery of the State Academic Content Standards by all students.
505
506 Recommended Action:
507 4. The State Board of Education should provide incentives in the
508 Instructional Materials Adoption process to promote the utilization of
509 rigorous and effective digital content in curriculum and assessment
510 that are aligned to State Academic Content Standards and take
511 advantage of current technology.
512 5. The State should provide incentives to business and industry to
513 develop rigorous and effective digital content in curriculum and
514 assessment that are aligned to State Academic Content Standards and
515 take advantage of current technology.
516 6. The State should provide incentives to districts and schools to integrate
517 rigorous and effective digital content in curriculum and assessment
518 that are aligned to State Academic Content Standards and take
519 advantage of current technology.
520
521 **Target Tech** Indicators:
522 • 100% of curriculum and assessment incorporate rigorous and effective
523 digital content that is aligned to state academic standards and takes
524 advantage of current technology.
525 • 100% of students and educators utilize curriculum and assessment that
526 incorporate rigorous and effective digital content that is aligned to state
527 academic standards and takes advantage of current technology.
528 • 100% of educators utilize California Learning Resource Network (CLRN)
529 to assist in developing lesson plans that incorporate rigorous and effective
530 digital content, integrate state academic standards, and take advantage of
531 current technology.
532
533 • **Information and Technology Literacy**
534
535 Goal: All students will develop skills that enable them to meet and exceed the
536 demands for an information and technologically literate workforce.
537
538 Recommended Action:
539 7. The State should provide incentives to establish and sustain **high-**
540 **quality partnerships** and annually recognize exemplary partnerships
541 that develop student information and technology literacy.

542
543 **Target Tech** Indicators:
544 • 100% of information literacy skills are embedded in and assessed by the
545   State Academic Content Standards[7]
546 • 100% of high-quality partnerships develop student mastery of information
547   and technology literacy skills.
548
549
550 *Professional Development: Systemic Reforms and Continuous Improvement*
551
552 • **Equity and Access**
553
554 Goal: All educators will have access to rigorous and effective systemic
555 professional development that promotes the integration of technology in
556 education.
557
558 Recommended Actions:
559   8. The State should use the IPI to develop incentives and allocate
560   resources to districts and schools to help them achieve ubiquitous
561   access to rigorous and effective systemic professional development
562   that promotes the integration of technology in education.
563
564 **Target Tech** Indicators:
565 • 100% of educators have ubiquitous access to rigorous and effective
566   systemic professional development that promotes the integration of
567   technology in education.
568 • 100% of educators' release time is compensated for rigorous and effective
569   systemic professional development that promotes the integration of
570   technology in education.
571
572 • **Systemic Professional Development**
573
574 Goal: All educators will receive the training, resources and support necessary
575 to appropriately and effectively integrate technology into curriculum,
576 assessment, pedagogy, and school management.
577
578 Recommended Action:
579   9. The State should provide incentives to districts and schools to foster
580   and sustain rigorous and effective systemic professional development
581   that promotes the integration of technology in education.
582   10. The State should provide incentives to business and industry to foster
583   and sustain rigorous and effective systemic professional development
584   that promotes the integration of technology with their education
585   products.

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[7] See Appendix III.

586	11. The State should use technology and statewide technology resources to
587	foster and sustain rigorous and effective systemic professional
588	development that promotes the integration of technology in education.
589	
590	**Target Tech** Indicators:
591	• 100% of professional development is systemic and promotes the
592	integration of technology in education, and uses technology to deliver
593	rigorous and effective training, mentoring, and support to educators
594	statewide.
595	• 100% of educators use and integrate rigorous and effective digital
596	content into their practice.
597	
598	• **Leadership and Collaboration**
599	
600	Goal: All educators will engage in professional activities that develop
601	rigorous and effective digital content, integrate technology in education, and
602	promote leadership and collaboration across the education profession.
603	
604	Recommended Action:
605	12. The State should provide incentives that fairly compensate educators
606	who show leadership by developing technology innovations and
607	transfer the intellectual property rights to the State, thereby, placing
608	the innovations in the public domain.
609	13. The State should provide incentives to enhance K-12 collaboration
610	with higher education, business and industry, nonprofits and
611	community-based organizations to use technology across the
612	professional development continuum (teacher education through
613	accomplished teaching).
614	
615	**Target Tech** Indicators:
616	• 100% of districts and schools offer systemic professional
617	development, perhaps in partnerships, which cultivate leadership skills
618	and encourage experimentation with the effective uses of technology.
619	• 100% of districts and schools provide opportunities for educators to
620	engage in collaborative activities focused on technology integration.
621	
622	• **Continuous Improvement**
623	
624	Goal: All educators will participate in professional activities that encourage
625	reflective practices and use technology to continuously improve curriculum,
626	assessment, pedagogy, and school management.
627	
628	Recommended Action:
629	14. The State should provide incentives to districts and schools that
630	encourage educators to use data to inform reflective practice and guide

631	continuous improvement; and frequently publish those exemplary
632	applications of data-driven decision-making.
633	15. The State should provide incentives to high-quality partnerships and
634	annually recognize exemplary partnerships that deliver professional
635	development focused on reflective practice and continuous
636	improvement.
637	
638	**Target Tech** Indicators:
639	• 100% of districts and schools offer systemic professional development
640	that teaches data-driven decision-making skills and encourages the use
641	of technology for continuous improvement.
642	• 100% of districts and schools make use of state of the art technology
643	to continuously improve curriculum, assessment, pedagogy, and
644	school management.
645	
646	*Infrastructure: Sustainability and Comprehensive Planning*
647	
648	• **Equity and Access**
649	
650	Goal: All students and educators must be able to access and utilize all
651	necessary and appropriate technology resources anytime, anywhere.
652	
653	Recommended Action:
654	16. The State should use the IPI to develop incentives and allocate
655	resources to districts and schools to help them achieve ubiquitous
656	access for all students and educators.
657	17. The State should explore providing learning opportunities that use
658	technology to promote State Academic Content Standards and qualify
659	for average daily attendance (ADA) funding, allowing for greater
660	flexibility with categorical funding and resources.
661	
662	**Target Tech** Indicators:
663	• 100% of students and educators have ubiquitous access and can utilize
664	all necessary and appropriate technology.
665	• 100% of districts and schools have greater flexibility with categorical
666	funds and the allocation of resources to promote learning opportunities
667	using technology.
668	
669	• **Sustainability and Comprehensive Planning**
670	
671	Goal: All districts and schools must engage in comprehensive technology
672	planning, incorporating total cost of ownership models into annual budget
673	processes, and design infrastructure for sustainability and optimal utilization
674	of present and future technology.
675	
676	Recommended Actions:

677	18. The State should require districts and schools to incorporate the total
678	cost of ownership model as a prerequisite to receiving new education
679	technology funding.
680	19. The State should require District Planning Guidelines to be updated
681	every two years.
682	20. The State should provide incentives to high-quality partnerships and
683	annually recognize exemplary partnerships that foster innovation and
684	sustain technology acquisition and integration.
685	
686	**Target Tech** Indicators:
687	• 100% of districts and schools incorporate the total cost of ownership
688	model in their budgeting and planning for technology.
689	• 100% of districts and schools have technical support available twenty-
690	four hours a day and seven days a week.
691	
692	• **Leveraging Existing Resources**
693	
694	Goal: All policymakers and educators must collaborate to promote flexibility
695	with existing state technology tools, funding mechanisms, and additional
696	resources to coordinate and develop a sustainable, ubiquitous, and dynamic
697	technology infrastructure.
698	
699	Recommended Action:
700	21. The State should develop incentives that promote the coordination of
701	existing education policy and resources for technology acquisition and
702	integration.
703	22. The State should allow any and all categorical funding to be used for
704	technology acquisition and integration.
705	
706	**Target Tech** Indicators:
707	• 100% of districts and schools utilize state resources and work to
708	coordinate local technology decisions with regional and statewide
709	education opportunities for technology acquisition and integration.
710	• 100% of districts and schools have flexibility to leverage their
711	resources and reallocate funding for technology acquisition and
712	integration.
713	
714	• **Collecting, Storing, Using, and Securing Data**
715	
716	Goal: All policymakers, educators, students, and parents will have anytime,
717	anywhere access to appropriate and necessary data that is securely collected
718	and stored to help them make better-informed decisions related to the
719	integration of technology and effective educational practices.
720	
721	Recommended Actions:

722	23. The State should provide support and assistance to districts and
723	schools to help them collect and use data to make better-informed
724	decisions.

23. The State should provide support and assistance to districts and schools to help them collect and use data to make better-informed decisions.
24. The State should use technology to coordinate state efforts to collect, secure, analyze, plan, and annually publish data related to technology integration and its impact on district, school, and student improvement.

Target Tech Indicators:
- 100% of districts and schools collect and use data relevant to technology integration and its impact on curriculum, assessment, pedagogy, and school management to make better-informed decisions.
- All education stakeholders have the necessary and appropriate data available to them through the State to help them better understand the educational effects of technology on curriculum, assessment, pedagogy, and school management.

Appendix I: Definitions of terms used in plan

Data-driven decision-making: A process where educators use a variety of district, school, educator, student, and community data to make better-informed decisions about how to improve technology use, acquisition, and integration in education.

Digital content: The digitized multimedia material that calls upon students to seek and manipulate information in the collaborative, creative and engaging ways that make digital learning possible. It includes video on demand, software, CD-ROMs, websites, e-mail, online learning management systems, computer simulations, streamed discussions, data files, databases, audio, and all other digital applications and devices.

High-quality partnerships: Collaborative agreements that are beneficial to all parties and occur between districts and schools with institutions of higher education, business and industry, and nonprofits and community-based organizations.

Information literacy: The ability to locate, access, evaluate and effectively use information as needed from a variety of sources.

Infrastructure Performance Index (IPI): An index of multiple measures that describes the ideal learning environment for students and educators. The IPI should represent an objective standard that all districts and schools should achieve and should be considered a parallel index to the API. The IPI should be used by policymakers and educators to make better-informed decisions regarding allocation of resources and primacy of legislation needed to improve education technology integration.

Professional activities: Includes all activities relating to training, mentoring, conference presentations, research, publishing, materials development and evaluation, and participation

767	in and contributions to projects such as the Digital California Project (DCP), the California
768	Learning Resource Network (CLRN) and other online resources.
769	
770	*Systemic professional development*: A model for professional development that includes
771	continuous and comprehensive anytime, anywhere training that evolves with, and
772	accommodates all educators' needs and educational environments.
773	
774	*Target Tech:* Is the desired level for every district and school to achieve and is further
775	articulated in Appendix II: CEO Forum StaR Chart.
776	
777	*Technology integration*: Technology is seamlessly integrated into school culture,
778	management, pedagogy, curriculum, and assessment. Effective and appropriate integration
779	of educational technology is part of a planned program of school improvement as it relates to
780	school management and student mastery of State Academic Content Standards.
781	
782	*Technology literacy*: The ability to use technology to improve student achievement, and the
783	capability to think critically about the use and integration of technology in teaching and
784	learning. ISTE NETS standards describe the technology skills and knowledge students
785	should acquire as they progress through the K-12 system and is further articulated in
786	Appendix IV: ISTE's NETS.
787	
788	*Total Cost of Ownership:* A model that incorporates all aspects of technology costs and
789	includes, technical support, professional development, maintenance, replacement, recycling,
790	and disposal.
791	
792	*Ubiquitous access*: Is the availability of all resources necessary to utilize technology for
793	teaching and learning, anytime, anywhere. It includes access to hardware, software, online
794	resources, digital content, curriculum, assessment, and technical support.
795	

796 Appendix II: CEO Forum K-12 STaR and Teacher Preparation StaR
797 Charts
798 http://www.ceoforum.org/starchart.cfm
799

800 Appendix III: Information literacy skills/English-Language Arts Academic
801 Content Standards
802 *Education Technology Planning: A Guide for School Districts:* Appendix B
803 http://www.cde.ca.gov/ctl/edtechplan/appendixes.pdf
804

805 English-Language Arts Content Standards for California Public Schools
806 http://www.cde.ca.gov/standards/reading/
807

808 Appendix IV: ISTE's National Education Technology Standards (NETS)
809 http://cnets.iste.org/
810

810	
811	**Appendix V: Current statewide technology resources**
812	

813 **California Learning Resource Network (CLRN).** CLRN services include the
814 review of supplemental electronic learning resources (including software, on-line
815 resources, and video) and on-line model technology lessons for alignment with the
816 State Board-adopted Academic Content Standards. The review criteria used in this
817 process were approved by the State Board of Education. The goal is to provide a
818 comprehensive instructional delivery package that combines standards-aligned
819 resources and standards-based lesson plans in a single, easy-to-use access point. The
820 searchable website includes the review results of the resource evaluation, the
821 standards-based instructional lessons, and links to other resources. Refer to the
822 website at http://www.clrn.org.

823 **California Student Information System (CSIS).** CSIS builds the capacity of Local
824 Education Agencies (LEAs) to implement and maintain comparable, effective, and
825 efficient student information systems that supports LEA daily program needs and
826 promotes the use of information for educational decision-making by school-site,
827 district office and county staff. It enables the accurate and timely exchange of student
828 transcripts between Local Education Agencies and post secondary institutions. CSIS
829 assists Local Education Agencies with the transmittal of state reports electronically to
830 the California Department of Education, thereby reducing reporting burden of LEA
831 staff.

832 **California Technology Assistance Project (CTAP).** CTAP works collaboratively with all
833 school districts and county offices of education, through a network of eleven regions
834 statewide, to meet locally defined technology-based needs. CTAP regional staff provide
835 assistance in the areas of staff development; learning resources; hardware
836 telecommunications infrastructure; technical assistance to school districts in developing a
837 support system to operate and maintain an education technology infrastructure, including
838 improving pupil record keeping and tracking related to pupil instruction; coordination with
839 federal, state, and local programs consistent with State Board-adopted Academic Content
840 Standards; and funding for technology. Refer to the website at
841 http://www.cde.ca.gov/edtech/ctap.htm.
842

843 **Digital California Project (DCP).** DCP provides California's K-12 education community
844 with access to the high speed, high bandwidth on-line network currently available to higher
845 education. DCP is designed to build the necessary network infrastructure needed to provide
846 districts with at least one access point in each county to the high-speed statewide network.
847 Refer to the website at http://www.cenic.org/CDP.html.

848 **Technical Support for Education Technology in Schools (TechSETS).** This project
849 provides professional development and resources for technology staff. Services
850 include identifying technology skills needed, along with appropriate professional
851 development, arrayed in a user-friendly matrix; identifying cost effective sources of
852 training aligned to the matrix of skills; providing resources and support for California
853 school technologists through an online interactive helpdesk, and providing assistance

854   for planning and installing technology infrastructures. Refer to the website at
855   http://www.techsets.org.

856   **Technology Information Center for Administrative Leadership (TICAL).** TICAL
857   provides assistance for district and site administrators by providing professional
858   development focused on "digital school leadership" for educational administrators in
859   the areas of: data-driven decision making, integrating technology into standards-based
860   curriculum, technology planning, professional development needs of staff, financial
861   planning for technology, and operations and maintenance. Professional development is
862   conducted through a series of workshops provided by TICAL cadre members
863   throughout the state. TICAL maintains a web portal that features hundreds of
864   resources that have been reviewed and recommended by practicing administrators to
865   assist with digital school leadership. The portal is frequently augmented with current
866   content that provides just-in-time assistance for administrators and is also used as the
867   dissemination vehicle for information on upcoming professional development
868   workshops. Refer to the website at http://www.portical.org.

869

870   **References:**

871
872   TO BE ADDED
873
874